

## Type II First Branchial Cleft Cyst: A Case Report with Review of Literature

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**Abstract** We report a rare case of type II first branchial cleft cyst that presented as an intraparotid cyst. Rarity and varied presentations of the first branchial cleft cysts have led to frequent misdiagnosis. High index of suspicion is required. Complete excision is the main treatment.

**Keywords** Branchial cyst · Congenital cyst · Intraparotid cyst

### Introduction

Congenital cystic lesions of the parotid glands include dermoid cysts, branchial cleft cysts, branchial pouch cysts and congenital ductal cysts [1]. Branchial anomalies account for 17% of all paediatric cervical masses. The incidence of the first cleft anomalies is 10% of all branchial cleft defects [2, 3]. First branchial cleft anomalies are often located close to the parotid gland especially where the superficial lobe overlies the lesion. In the series of Oslen et al. 85% of the cysts were located within the parotid gland [2].

### Case Report

A female patient aged 12 years presented with a right infra-auricular swelling of 1 year duration which measured 4 × 3 cms. The consistency was cystic with well defined

borders and smooth surface. Patient had right ear discharge that was whitish, scanty, foul smelling and continuous.

On careful examination the cheesy discharge was coming from the floor of the cartilaginous part of right external auditory canal (EAC). More discharge could be expressed by applying pressure over the swelling. Tympanic membrane and hearing was normal. Examination of nose and throat was normal. Systemic examination, routine haematological and urine examinations were normal. Fine needle aspiration cytology of the cyst was inconclusive.

Contrast Computerised Tomographic scan showed a well circumscribed ovoid cystic lesion measuring 4.2 × 2.2 × 2.1 cms within the right parotid gland. It had a uniformly thick wall without any calcifications. There was no extra glandular extension (Figs. 1, 2).

### Treatment Given

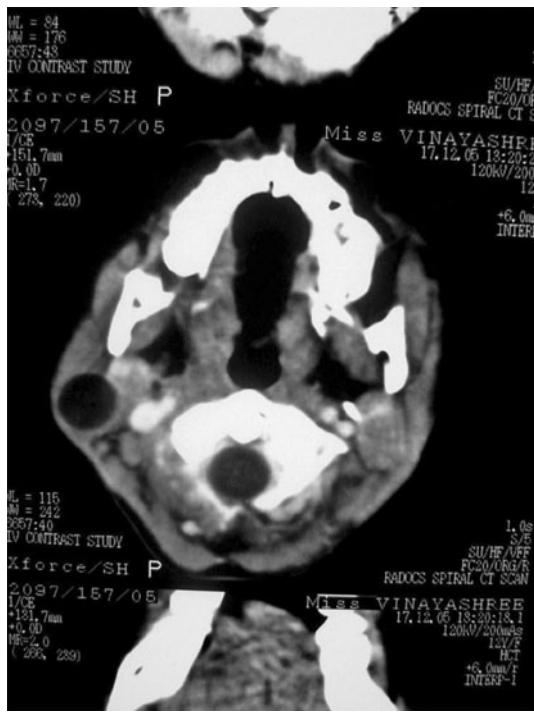
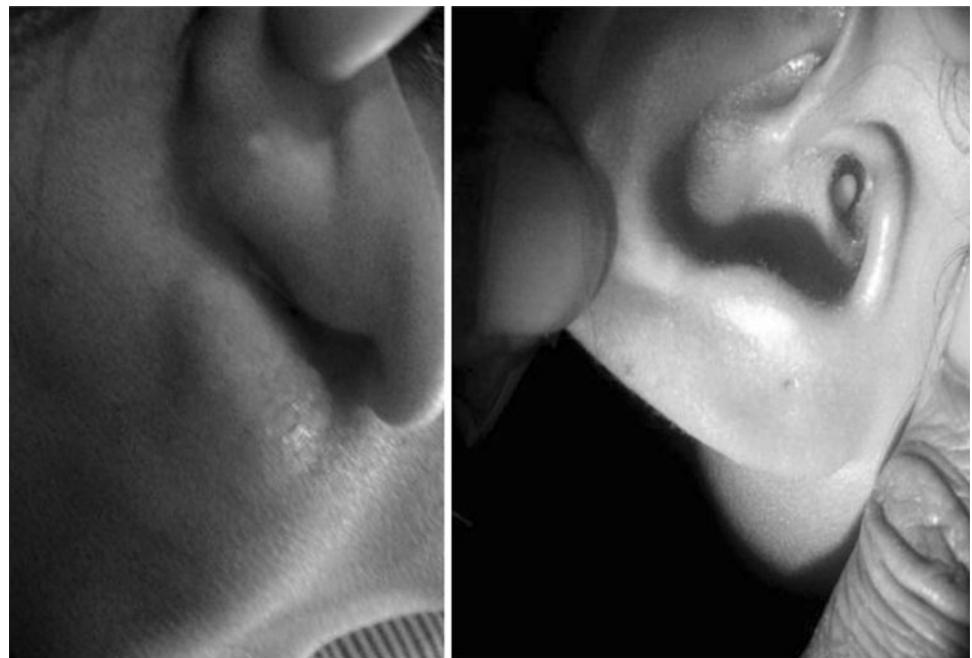
Under general anaesthesia, the intraparotid cystic swelling was exposed. The cyst was extending superiorly towards the EAC. Methylene blue was injected into the cyst and the dye was seen leaking from the opening in the floor of the EAC. The superior extension was traced till the opening in the floor of the cartilaginous part of the right EAC. After identifying the facial nerve, the cystic sac, along with its tract including a rim of cartilage and skin around the opening in the EAC was excised. The soft tissue in the canal was approximated with catgut. The canal was packed with ointment soaked ribbon gauze.

### Morphology

The cyst had a thin wall with a tract and contained cheesy white substance. The microscopic examination of the excised mass showed a cyst wall lined by keratinized stratified

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**Fig. 1** Postaural swelling and the cheesy material leaking from the floor of the external auditory canal on pressing the swelling



**Fig. 2** CT scan showing a well encapsulated cystic mass in the right parotid gland

squamous epithelium and subepithelial stroma had focal lymphocytic infiltration. A small bit attached to cyst wall showed cartilage and skin. A diagnosis of branchial cleft cyst was made.

Patient was followed up for 1 year and there was no recurrence.

## Discussion

Cystic lesions of the parotid glands may be true cysts, lymphoepithelial cysts, mucoceles, teratomas or branchial cysts [4]. First branchial cleft cysts (FBCC) are very rare and comprise less than 1% of all branchial anomalies [5]. There are only 200 cases reported in literature [6]. External ear being a derivative of first branchial cleft, anomalies of the first branchial cleft often involve external ear structures. Work classified FBCC into two types. Type I is ectodermal in origin and is considered to be a duplication of membranous EAC and lateral to the facial nerve. Type II is both ectodermal and mesodermal in origin with cartilaginous components. It may pass medially or laterally to the facial nerve [7].

The type II first branchial cleft anomalies consist of a fistula running from the floor of the EAC to the upper neck below the mandible. The cyst is closely associated with the parotid gland. The sinus opening is usually in the Pochet's triangle bounded by the EAC above, the mental region anteriorly and hyoid bone inferiorly [5, 8]. Low incidence of branchial cleft cysts and varied clinical presentations lead to frequent misdiagnosis.

CT Scan is a useful study for salivary gland masses. Definitive diagnosis is by excisional biopsy. High index of suspicion for the first branchial cleft cyst is needed when the sinus opening is located in the Pochet's triangle.

The age of presentation of FBBC can vary from 20 days to 82 years at a mean age of 18.9 years [9]. Otorrhea is the most frequent otological symptom and the condition should be suspected if recurrent/chronic otorrhea is present in the absence of chronic otitis media.

## Conclusion

Rarity and varied presentations of the first branchial cleft cysts have led to frequent misdiagnosis and inappropriate treatment. High index of suspicion is required when the sinus opening is in the Pochet's triangle. Complete excision is the main treatment. Diagnosis is by clinical correlation and histological examination of the mass.

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